

AMENDMENTS TO THE CLAIMS

Please substitute the following amended claims for those currently pending:

1-40. (cancelled)

41. (previously presented) A device for measuring the movement of an object comprising:

- a. first and second matched pairs of fixed coils;
- b. a patient coil configured to wrap elastically around a patient's body part;
- c. a current source coupled to, and adapted to energize, either the matched pairs of fixed coils or the patient coil; and
- d. a volume sensing element comprising whichever of the matched pairs of fixed coils or the patient coil that is not coupled to the current source;
- e. whereby the first and second matched pairs of fixed coils are arranged to reduce a sum of magnetic noise signals from remote sources to zero and to generate a relatively homogeneous magnetic field in a spatial volume occupied by the patient's body part.

42. (previously presented) The device of claim 41, wherein the spatial volume has a center and the first and second matched pairs of fixed coils are arranged symmetrically about a vertical plane extending through the center of the spatial volume and are arranged above a horizontal plane passing through the center of the spatial volume.

43. (previously presented) The device of claim 42, wherein the first matched pair of fixed coils are each positioned approximately 503 millimeters from the vertical plane.

44. (previously presented) The device of claim 43, wherein the second matched pair of fixed coils are each positioned approximately 650 millimeters from the vertical plane.

45. (previously presented) The device of claim 42, wherein the spatial volume has a bottom and wherein (a) the first matched pair of fixed coils each comprise approximately 300 turns, (b) the second matched pair of fixed coils each comprise approximately 90 turns, (c) the first matched pair of fixed coils are wound on a first pair of rods that are positioned approximately 420 millimeters above the bottom of the spatial volume, (d) the second matched pair of fixed coils are wound on a second pair of rods that are positioned approximately 510 millimeters above the bottom of the spatial volume, (e) the first matched pair of fixed coils are each positioned approximately 503 millimeters from the vertical plane, (f) the second matched pair of fixed coils are each positioned approximately 650 millimeters from the vertical plane, and (g) the spatial volume extends 250 millimeters in the vertical direction and 400 millimeters in the horizontal direction.

46. (previously presented) The device of claim 41, wherein the current source is coupled to, and adapted to energize, the matched pairs of fixed coils, and the volume sensing element comprises the patient coil.

47. (previously presented) The device of claim 41, wherein the current source is coupled to, and adapted to energize, the patient coil, and the volume sensing element comprises the matched pairs of fixed coils.

48. (previously presented) The device of claim 41, wherein the spatial volume extends 250 millimeters in the vertical direction and 400 millimeters in the horizontal direction.

49. (previously presented) The device of claim 41, wherein the first matched pair of fixed coils each comprise approximately 300 turns and the second matched pair of fixed coils each comprise approximately 90 turns.

50. (previously presented) The device of claim 41, wherein the spatial volume has a bottom and wherein the first matched pair of fixed coils are wound on a first pair of rods that are positioned approximately 420 millimeters above the bottom of the spatial volume.

51. (previously presented) The device of claim 50, wherein the second matched pair of fixed coils are wound on a second pair of rods that are positioned approximately 510 millimeters above the bottom of the spatial volume.

52. (previously presented) The device of claim 41, wherein the first and second matched pairs of fixed coils are wound on first and second pairs of ferrite rods, each rod having a diameter of approximately 8 millimeters, a length of approximately 150 millimeters, and a g value of approximately 100.

53. (currently amended) The device of claim 41, wherein the first matched pair of fixed coils comprise first and second fixed coils ~~are connected electrically in opposite phases, and the second matched pair of fixed coils comprise third and fourth fixed coils connected electrically in opposite phases.~~

54. (previously presented) The device of claim 41, wherein the device is configured to measure variations in tidal volumes in neonates less than 1000 grams.

55. (previously presented) The device of claim 41, wherein (i) the spatial volume has a center, (ii) first and second planes both extend through the center, the first plane being perpendicular to the second plane, and (iii) the first and second matched pairs of fixed coils are arranged symmetrically about the first plane and on the same side of the second plane.

56. (previously presented) A method of measuring the movement of an object comprising:

- a. arranging first and second matched pairs of fixed coils;
- b. wrapping a patient coil around a patient's body part;
- c. energizing either the matched pairs of fixed coils or the patient coil;
- d. sensing a volume of the body part with whichever of the matched pairs of fixed coils or the patient coil is not energized;
- e. reducing a sum of magnetic noise signals from remote sources to zero by the arrangement of the first and second matched pairs of fixed coils; and
- f. generating a relatively homogeneous magnetic field in a spatial volume occupied by the patient's body part.

57. (previously presented) The method of claim 56, wherein the spatial volume has a center and the first and second matched pairs of fixed coils are arranged symmetrically about a vertical plane extending through the center of the spatial volume and are arranged above a horizontal plane passing through the center of the spatial volume.

58. (previously presented) The method of claim 57, wherein the first matched pair of fixed coils are each positioned approximately 503 millimeters from the vertical plane.

59. (previously presented) The method of claim 58, wherein the second matched pair of fixed coils are each positioned approximately 650 millimeters from the vertical plane.

60. (previously presented) The method of claim 57, wherein the spatial volume has a bottom and wherein (a) the first matched pair of fixed coils each comprise approximately 300 turns, (b) the second matched pair of fixed coils each comprise approximately 90 turns, (c) the first matched pair of fixed coils are wound on a first pair of rods that are positioned approximately 420 millimeters above the bottom of the

spatial volume, (d) the second matched pair of fixed coils are wound on a second pair of rods that are positioned approximately 510 millimeters above the bottom of the spatial volume, (e) the first matched pair of fixed coils are each positioned approximately 503 millimeters from the vertical plane, (f) the second matched pair of fixed coils are each positioned approximately 650 millimeters from the vertical plane, and (g) the spatial volume extends 250 millimeters in the vertical direction and 400 millimeters in the horizontal direction.

61. (previously presented) The method of claim 56, wherein energizing comprises energizing the matched pairs of fixed coils, and sensing comprises sensing with the patient coil.

62. (previously presented) The method of claim 56, wherein energizing comprises energizing the patient coil, and sensing comprises sensing with the matched pairs of fixed coils.

63. (previously presented) The method of claim 56, wherein the spatial volume extends 250 millimeters in the vertical direction and 400 millimeters in the horizontal direction.

64. (previously presented) The method of claim 56, wherein the first matched pair of fixed coils each comprise approximately 300 turns and the second matched pair of fixed coils each comprise approximately 90 turns.

65. (previously presented) The method of claim 56, wherein the spatial volume has a bottom and wherein the first matched pair of fixed coils are wound on a first pair of rods that are positioned approximately 420 millimeters above the bottom of the spatial volume.

66. (previously presented) The method of claim 65, wherein the second matched pair of fixed coils are wound on a second pair of rods that are positioned approximately 510 millimeters above the bottom of the spatial volume.

67. (previously presented) The method of claim 56, wherein the patient is a neonate less than 1000 grams.

68. (previously presented) The method of claim 56, wherein (i) the spatial volume has a center, (ii) first and second planes both extend through the center, the first plane being perpendicular to the second plane, and (iii) the first and second matched pairs of fixed coils are arranged symmetrically about the first plane and on the same side of the second plane.

69. (new) The method of claim 56, wherein the first matched pair of fixed coils comprises first and second fixed coils connected electrically in opposite phases, and the second matched pair of fixed coils comprises third and fourth fixed coils connected electrically in opposite phases.